VOL. VI SEPTEMBER, 1900 No. 9

# The Forester

## A MONTHLY MAGAZINE

devoted to the care and use of
forests and forest trees and
to related subjects

PUBLISHED BY

The American Forestry Association

WASHINGTON, D. C.

$1.00 a Year Single Copies 10 Cents

For sale at Brentano's:
31 Union Square, New York; 1015 Pennsylvania Avenue, Washington;
218 Wabash Avenue, Chicago; 37 Avenue de l'Opera, Paris

Entered at the Post Office in Washington, D. C., as second class matter

# The Forester

Vol. VI No. 9

## TABLE OF CONTENTS



## THE PLATFORM OF THE FORESTER

In order to assist its readers to grasp present problems the FORESTER indicates five directions in which an effective advance is chiefly needed.

1. The forest work of the United States Government which is now being carried on by the Department of Agriculture, the General Land Office, and the Geological Survey, should be completely and formally unified. The division of authority between the three offices involves great waste, and consolidation is directly and emphatically pointed to by the present voluntary co-operation between them.

2. A system of forest management under the administration of trained foresters should be introduced into the national and state forest reserves and parks.

3. Laws for the protection of the forests against fire and trespass should be adapted to the needs of each region and supported by the provisions and appropriations necessary for their rigorous enforcement.

4. Taxation of forest lands should be regulated so that it will encourage not forest destruction but conservative forest management.

5. The attention of owners of woodlands should be directed to forestry and to the possibilities of applying better methods of forest management.

Persons asking themselves how they can best serve the cause of forestry will find suggested here lines of work along which every effort will tell. No opportunity for doing good along these lines should be neglected.


By courtesy of the *Western Graphic.*

TAKEN ABOVE THE FIRE IN THE SIERRA MADRES, JULY 23, 1900.

See page 216.

# THE FORESTER.

VOL. VI. SEPTEMBER, 1900. No. 9.

## ON THE POSSIBLE EFFECTS OF THE GYPSY MOTH ON AMERICAN FORESTS.

BY N. S. SHALER,

*Harvard University.*

Between twenty and thirty years ago the Gypsy Moth (*Ocneria dispar*) was effectively introduced into this country. Owing to the peculiar nesting habits of this insect, which lays its eggs in crannies of furniture, barrels, etc., as well as on the trees it infests, colonies had doubtless been frequently hatched within the United States before the successful implantation in Malden, Mass., was made. The reason for this difference is to be found in the fact that the naturalist who attained the unhappy success took pains to have a succession of broods, so that there was a chance for a certain process of acclimatization of the species and also for effective cross-fertilization to take place. It was the purpose of Mr. Trouvelot who did this work, to keep the introduced insects in confinement and to interbreed them with various native species of moths with the expectation of producing a hybrid which would feed on the leaves of our numerous American species of oak and produce a valuable kind of silk. A storm broke up and scattered his cages and their tenants so that his experiment was abandoned. Mr. Trouvelot thought that this accident had destroyed all his captives; he died without knowing that his well-meant endeavor was to bring a serious evil upon this country.

For several years after the Malden insectary was destroyed, the presence of the Gypsy Moth was not remarked. Suddenly the creature began to appear in incredible numbers, so that in two or three successive seasons it had multiplied at a rate probably greater than has ever been observed in any other species of moth, and hardly surpassed by that of the African locusts. All the vegetation on many hundreds of acres of tilled land was stripped of its leaves as were also considerable areas of forest. The starving hosts of caterpillars were forced to march to fresh fields. They invaded homes and so covered the sidewalks of the villages that their crushed bodies made the footing slippery. At this stage in the history of the invasion the creature was first recognized as the Gypsy Moth. In the previous year it was supposed to be some native species which had temporarily increased, as is the habit of certain forms which suddenly become numerous and then as suddenly disappear. When it was known that the most destructive of European insects had become firmly established in this country and was even more vigorously at work than in any part of the old world, the people were quickly aroused to action. As the species had already spread to several towns it was evident that no local authorities could be trusted to suppress it. Therefore the Commonwealth was asked to appoint a commission which should undertake the task. Unhappily the commission at first appointed as well as the sum supplied for the task were alike inadequate; so that two more years were lost before an effective campaign was be-

gun. Finally the task was committed to the State Board of Agriculture, to whom it should in the first place have been assigned.

The history of the work done by the state Board of Agriculture cannot be told here. The results of its labors were in brief the determination of the area occupied by the insect and the institution of systematic and effective means for the extermination of the pest. A careful inquiry showed that the moth, though developed in large numbers on a comparatively small field, perhaps in all not more than three square miles in extent, had been planted in small but flourishing colonies on an area of about one hundred square miles. In the course of ten years the insect was substantially exterminated in the field which it originally occupied and the growth of the greater part of the outlying colonies was arrested. It is probable that the number of insects alive in the spring of this year was not the thousandth part of that which it was when the task of suppression was undertaken. It seems likely that the development of new colonies had ceased and that the greater part of those once in existence had been destroyed.

At all stages in the work of the State Board it has been found impossible to obtain adequate and timely grants of money from the Legislature. Owing to this difficulty much of the large sum that has been expended has not been applied in the most effective manner. Of late, because the ravages of the pest have been interrupted —it has become so rare that it is not easy to find a dozen specimens of the insect in a day's search—public interest in the work has declined, and there is danger that it may be brought to an end. It is well, therefore, to consider the consequences that are likely to arise from the abandonment of the effort to exterminate the invader.

It is barely possible that the work which has been done in reducing the numbers of the Gypsy Moth may have brought the colonies to the state in which the few survivors may not be able to hold their own and multiply. There is some reason indeed for believing that a solitary nest, though it may hatch and yield several hundred insects, often fails to found a colony. Yet the frequent experience that an infested area which had been nearly cleared of the species after two seasons of neglect becomes again thickly occupied makes it almost certain that within five or ten years after efforts for suppression are discontinued the evil will be as great as when it began.

If the Gypsy Moth is allowed opportunity to develop in the area now occupied by its colonies we may expect the next outbreak to include an area at least ten times as great as that of twenty years ago. Allowing for the gradual extension of the colonies on every side the field is likely to include not less than six hundred square miles; it may be a thousand square miles. Whatever may be the amount of public interest it is not to be reckoned that the State would feel inclined to appropriate annually the million or more dollars required for a new campaign of suppression. The several efforts which have been made to obtain aid in this task from the federal government have proved futile. So that there is no more reason to hope for aid from that avenue. It is, therefore, reasonable to assume that if the work of fighting the moth is interrupted for a term of years the creature will become a chronic and widespread pest.

What we know of the distribution of the Gypsy Moth in the old world leads to the conclusion that it is likely to flourish in all the country between the northernmost parts of the tilled districts inward to the Gulf of Mexico — in all the region where there is abundant vegetation and an immunity from killing pests for a summer of ninety days' duration. In this field it will find few natural enemies, for neither the birds nor the insects of America have acquired the habit of preying to any considerable extent upon the stranger. So far as the tilled ground and orchards are concerned it is probable that by various means the danger of destruction may be averted; but for our forests, to which the moth mostly betakes itself, there seems to be no prospect of safety. The experience of the State Board of Agriculture clearly shows that the only way in

Courtesy of Mass. Board of Agriculture.

A WOOD INVADED BY THE CATERPILLARS OF THE GYPSY MOTH. THE GRAY AREA HAS BEEN STRIPPED OF ITS FOLIAGE.

which the creatures can be cleared from a wood is by felling the trees and burning the ground over in a complete manner.

A careful inquiry into the habits of feeding of the Gypsy Moth has proved that none of our forest trees are safe from its at-

tack. The creature has, it is true, preferences, and until it becomes crowded will feed on certain species only. When it has so far increased in numbers that it is pressed for food, every green thing will be devoured. If need be it will eat the leaves of the poisonous species of the *Rhus*, both the *R. toxicodendron* and the *R. venenata*. While in general it prefers the foliage of the broad-leaved trees, when pressed it readily resorts to the conifers. In fact, it sweeps a wood as effectively as a fire.

For a year the secondary buds of most trees, buds that put forth after the crop of caterpillars has matured, serve to maintain the life of the forest, but the plants are rapidly weakened by the tax, and perish after two or three seasons of the infliction. It appears likely that in five years none of the aboreal forces would survive. Therefore we may assume that if the Gypsy Moth becomes firmly implanted in our forests, these forests are in a large measure likely to disappear. The processes will probably be slow, for the rate of dissemination of the insect is not great, yet the moths if plentiful will invade railway cars and other vehicles, so that the new colony may be planted at a distance of hundreds of miles from the fields where the species have become abundant.

It is not unlikely that some of the curious alterations in the distribution of forest trees which geologists have recognized may have been due to the development in former ages of the Gypsy Moth or other like destructive species of insect. Thus in the early Miocene Tertiary Europe was tenanted by a host of arboreal species closely akin to those that now form our admirable American broad-leaved forests. The Magnolias, the Gums and the Tulip trees, etc., were then as well developed in Europe as they are in this country. Suddenly all these species disappeared from the old world. There is no reason to believe that the change was due to an alteration in climate. There are many evidences indeed that such was not the case. It is a very reasonable conjecture that that alteration was brought about by the invasion of an insect enemy which may have been the ancestor of the Gypsy Moth.

What has been said above may make it plain to the reader that if the Gypsy Moth is allowed freely to extend itself in this country, the consequences are likely to become most serious. They may indeed attain to the height of a calamity. It is possible that effective enemies of this species may be developed in course of time, but the past twenty years has failed to show any such. It is possible that some change of climate may reduce or destroy the species, but for more than a score of years they have in no wise suffered from frosts or drouth or excessively wet seasons. It is the part of wisdom to face the issue; we should see that our generation has in this matter no right to trifle with the right of the generation to come. Our forests are next after our fields the natural basis of our prosperity. It is evident that they are endangered by the presence of this enemy.

---

## THE BIG TREES OF CALIFORNIA.

By William R. Dudley,

*Stanford University, California.*

A few weeks since the Editor of The Forester addressed me a note requesting a discussion of the present condition of the Big Tree tracts in the Sierras, plans for, and the prospect of their permanent preservation. This courtesy was greatly appreciated for the reason that I have spent a considerable portion of three summers, since 1894, camping beneath the shade of the larger and the little known groves south of the Kings River, and travel has led me through from one to three other groves, in each of three additional summers or springs.

I shall be able, however, to give at the present time, no more than a concisestatement of the facts with which I am familiar. photograph many of the trees, and, indeed, to study their habitat as closely as possible. Incidentally I have learned much

ROAD PASSING THROUGH "WAWONA," MARIPOSA GROVE.

My object in thus visiting these groves was to study the flora of the Sequoia region, visit all the groves, measure and of their ownership, and of their geological situation, in a region difficult of access from the standpoint of an ordinary traveler.

### THE CHARACTER AND NUMBER OF GROVES OF SEQUOIA GIGANTIA.*

Some have attempted to separate the various tracts, on the basis of acreage, into two classes — "groves" and "forests." This is not a natural division, and we will use only the term "groves." Like other species the Big Tree favors certain exposures, soils and elevations. The western slopes of the Sierras being furrowed by large stream valleys or profound barrancas, and bearing the disturbing marks of many local but extinct glaciers, the preferred elevation and soil of the Big Tree is often interrupted, and this interruption is still more often emphasized by the racial and aristocratic tendency to reproduce the species but sparingly. Hence the trees as individuals appear scattered, and are confined to irregular and isolated tracts. These tracts are often on two slopes of a lateral spur, springing westward (eastward also, in the southern part of their range) from the main divides of the Sierras; and the two groves sometimes approach or connect over a timbered gap on this divide. A careful consideration leads me to the enumeration of thirty-three distinct groves of the *Sequoia gigantia*, eight of them north and twenty-five of them south of the Kings River. Some eighteen or twenty of these are in the fairly well marked pairs mentioned above, where the trees cling to the brooksides or steep hollows in the true timber belt of the Sierras, but well toward its lower border. Another set of them occupy the upper canyons of the river forks, and still another the limited benches or plateaus found at the big tree altitude—5,500–8,500 feet.

### MILLING AMONG THE BIG TREES.

Of the northern group, the Mariposa—a group of the second or third class—belongs to the State of California; three others, one of six trees, one of thirty, and one of fifty trees apparently belong to the National Government. The Madera grove has been largely cut over; while the two Calaveras groves, one containing ninety the other nearly fourteen hundred trees, and historically worth to the world more than all the others, are, as every one knows, now held for lumbering or speculation.

Generally speaking the larger part of the Sequoia acreage south of the Kings River is in private hands, but it is an interesting and an important fact, known to but few, that through the operation of the lien-land law some private claims containing a considerable acreage of the Sequoia have gone back to the United States during the past year in the Tule River region. Of the important groves those of the Kings River proper are owned by the Sanger Lumber Company. These are three in number, and the Converse Basin grove is said to be the largest grove in existence. Much of these three groves has been lumbered off, and there appears no hope of saving any from the saw. The Kings River mills are first-class in capacity and run night and day during the open season. The General Grant Park, scarcely to be dissociated from the western-most of the Kings River Groves, contains four sections only (2,560 acres). It is nearly cut in twain by two private claims amounting to 320 acres, but there is no mill on them. Southwest of the Park is the Redwood Creek grove, all in the hands of a considerable number of private owners. There was formerly some lumbering here, but none has existed for many years. Next comes the beautiful Sequoia National Park, of seven townships, stretching entirely across the fan-shaped drainage basin of the Kaweah, and containing six, we might say eight, tracts of big trees, five of which are among the noblest in existence. The "Giant Forest" is the best known of these. Three of the five mentioned have not an acre of private claims. The Giant Forest, reputed to contain 2,500 acres, has apparently something over one-fourth of its area in private claims; but the amount of Sequoia thereon is more apparent than real, as the Giant

* It is most unfortunate that scientific nomenclature has made such a mess of the most remarkable species of tree in the world, that purists in priority must always disagree as to its specific name. Hence I shall use for the readers of THE FORESTER the name of *S. gigantia*, which is the best known.

Forest is a plateau with many meadows, and the private claims are mostly taken up by two local stockmen on the meadows. There are, however, a considerable number of big trees of fine proportions about the meadows within the claims. By proper procedure all these claims could be exchanged by the owners for other public lands. The Giant Forest is in no danger of decimation through milling. The other principal grove—that along the Mineral King road—has in it 360 acres of private claims and two small mills. Atwill's mill has been running on the Atwill claim of 160 acres for at least four years, and interruptedly before that. Its capacity is about 20,000 feet a day, but I think it now never runs as high as 10,000 feet. On a second claim a shingle mill has started during the past year, cutting, however, very little Sequoia so far.

Therefore no very vigorous lumbering is going on or likely to go on in the Sequoia Park, and wise governmental action might secure a complete cessation of it in the near future. There are several small outlying groves just beyond the park limits, some held privately, viz, Redwood Meadows and Salt Creek groves, which ought to be included in the Park. They are too inaccessible apparently to be lumbered. The North Tule River grove was mostly owned by N. P. Dillon, who at one time had a mill on it, abandoned years ago. Last May, if report is correct, he sold his claims to a local lumber company, which expects to erect a mill. The writer, knowing this grove was in the market, advised its purchase by the nation. If we had possessed a National Forestry Bureau charged with such matters this grove, commanding the entire forested slope of the North Tule watershed, would no doubt have been secured by it as a part of the national domain. In situation it occupies wild rocky benches, and surveyors of the Park boundary tell me that a portion of it is within the southern boundary of the Park. The writer discovered a small grove of big trees in this watershed outside the private claims and since then some others have been found.

The next grove, and the last of the groves really remarkable for its trees of superior size, is that centering around the Mountain Home, the Bear Creek or Middle Tule grove. It has all along been in private hands and most of it will go the way of the Kings River groves. Coburn's mill, running for some years is said to have a capacity for cutting 15,000 feet a day, but cuts much less. The Enterprise Company's mill, with a capacity of 30,000 feet has been running only about two years, and cuts on the average, 15,000 a day. In all these mills a large percentage of the cut is I believe of Pine and Fir.

Of the five groves remaining in the Tule River system, the majority are in private hands, held mostly by eastern capitalists, who make a specialty of investing in timber. No milling is now in operation on them.

It is not generally known that at least three tracts (the one on Freeman's Creek containing over 1,200 acres, all in private claims) are on streams running eastward toward the Kern River. Two of these are now on government land. Near the southern end of the Sierras—Western Divide—is the last of the groves, on Deer Creek, a stream which runs into the San Joaquin Valley. It is a small grove, not quite as large as the Calaveras "Home Grove," and, like the three preceding, has never been disturbed by the saw.

### SAVING THE BIG TREE GROVES.

In connection with the question of saving the big tree groves, there are two distinct phases. The appeal for the salvation of the Calaveras Grove is an expression of one of the noblest sentiments in human nature. In a measure also this sentiment goes out to every grove of the species. But the Big Trees are numerous enough south of the Kings River to constitute an important factor in that problem of tremendous importance to central California, viz, stream protection. Hence the salvation of as many groves as possible becomes a forestry question. At present opportunities for the reacquirement by the United States of the Sequoia land may offer, but the machinery is so slow as to be necessarily clumsy, and one expects it to fail.

Every effort of the American Forestry Association and the friends of forestry everywhere should be bent to the unification of the present triune system of government forestry work, and to the subsequent enlargement of the service in the Forestry Division, until it is developed to the necessary strength for dealing adequately with our great forestry problems. Then we may expect the local superintendent of the Sierra forests to watch his opportunity to secure for the United States any private claim of Big Tree timber, and we may confidently expect, moreover, that the confidence reposed in the Division by Congress will be so strong and the administration so efficient that eventually four-fifths of the primeval Sequoia land will come back to the government from which it should never have passed.

---

# FOREST LAW IN THE UNITED STATES.*

By Treadwell Cleveland, Jr.

## IX. LINES OF STATE ACTION.

We cannot attempt within the straitened limits of these papers to give a detailed review of forest legislation in all States having important forest laws, or even to treat exhaustively its whole course in a single State. All we can do is to give its general tenor and perhaps to indicate probable lines of further growth.

In 1867 there was appointed in Wisconsin a committee of the State Agricultural and Horticultural societies to report upon the disastrous effects of forest destruction; and the following year an act was passed "for the encouragement of the planting and growing of trees," etc., which provided an exemption from tax and a bounty for the growing of timber belts. The appointment of the committee of inquiry is an early instance of the general movement which is marked in a number of States by provisions of law establishing commissions of investigation, notably in the cases of Ohio and New York in 1884. Sometimes such commissions have been continued, sometimes their terms have expired and been renewed, as in New Hampshire, where the first commission was appointed in 1881, the second in 1885, and the present commission in 1893. Sometimes again, from a variety of causes, they have ceased to exist, as in the cases of California, and, recently, Wisconsin.

It has become the custom to cite the example of New York as typical for commissions, and the examples of Pennsylvania, Minnesota and Maine as typical for forest-fire laws. Certainly these States offer a wide legal horizon, which suggests instructive inferences.

Since 1885 New York has persisted in dealing with its forest problems through a several-headed commission having charge of a definite area of reserved State forest lands. From the first it has possessed a well-framed fire law and the support of a widening and deepening public sentiment; and up to 1894 it possessed also ample opportunity for experiment in forest management. Unhappily, however, the earlier personnel of the commission was not exemplary. Shrewd suspicions of malpractice disturbed the public confidence, and by an amendment to the State Constitution, adopted in 1894, the hands of the commissioners were tied. Since that date no timber can be cut, destroyed or sold from the State Preserves, and forest management is consequently impossible. To say that at least the forests are safe is but a very partial truth. They are safe from dishonest use on the part of their guardians; but this could be an important gain only so long as dishonest use was to be

* For Mr. Cleveland's first and second articles on this subject see the July and August numbers of The Forester.—Ed.

feared. With the appointment of a trustworthy commission, such as that now in office, the danger ceases and with it the need of legal safeguard, if indeed such a safeguard ought ever to be sought in the organic rather than in the special law. But no policy of "let alone" can keep a forest truly safe, as we have seen with reference to the Federal Reserves. That forest officers should be in charge of forests which they cannot manage, *i. e.*, harvest, except in cases where protective considerations demand complete stagnation, which is certainly not true of New York, is from the forester's standpoint simply absurd. There is promise that this dilemma—a commission able to use the forest and a forest that may not be utilized—will soon be removed. By legislation enacted in the last session of the legislature, the commission, in coöperation with the Division of Forestry, is preparing, for the first time, working plans, which are to be laid before the legislature next winter with recommendations that action be taken looking to the repeal of the Constitutional amendment. At the end of some two years we may look for the beginning of forest management in the New York Preserves.

The New York forest fire law, though excellent on paper, has never been more than tolerably efficacious. The example of Minnesota has shown the reason. A single head, a chief fire warden, is directly indicated as the only means for overcoming local indifference or favoritism and for offsetting that heaviest drag upon all provisions for public good, namely self-interest. Here also New York is beginning to learn from experience and example. By a recent law a chief fire warden is provided for. Good results cannot very well be wanting. Yet from the example of Pennsylvania, New York has perhaps still another lesson to learn. Pennsylvania has a law, passed in 1897, which provides for detective work in the detection of careless or intentional offenders against the forest fire laws. This device is successful in practice, and even on paper is no inconsiderable restraint upon the negligent or the mischievous. When we have said that the fire law of Maine is the basis for that of New York and several other States, the typical character of the legislation in the States just cited is made apparent.

Let us turn now to another set of conditions, those of Michigan, for example. Here we have, as in New York, a commission, but without the reserved State lands for it to control. Here also, by way of further contrast, we find the public sentiment, at least in so far as it reaches definite expression in law, hostile rather than friendly. Of the citizens of no other State can it be more truly said that those who are not with the forests are against them. For one Judas there are the others who sleep. And there is no sanctuary in which these can escape responsibility. Here the lumbermen have, over large areas, already completed that work of desolation, which, if partly the result of their anti-social motives, is also, and perhaps equally, the result of an economic condition for which the people of the State are themselves to blame. This false economic condition is the ultimately unintelligent excessive rate of taxation of forested lands. Such lands when owned by non-residents are assessed at rates which prohibit temperate and provident cutting. The taxes insure either loss for the owner or, in the long run, vastly greater loss for the State. The problem offered is by no means easy of solution. The commissioners are making every effort to find a satisfactory answer. Towns must live for the present, even if it cost them, first the timber which the non-resident owners of the county are driven to cut wholesale, and then the assessable property itself. The crux is this: How to tax values without overtaxing resources, and so draining them dry; or in other words, How to make the forest owner pay for his profits without forcing him to consume outright the capital from which those profits and at the same time the profits of the community are drawn. One way would be that suggested by Mr. Bruncken in his recent volume "American Forests and Forestry." This is to tax the gross receipts of sales of timber. By this device the enforcement of immediate harvesting is avoided, and the

chance is offered for recurrent cuttings, the continued if not perpetual devotion of present forested areas to forest uses. Only a revision of the tax laws can accomplish this or any similar amelioration of conditions resulting from excessive taxation, and the only real obstacle in the way is the apathy of the people themselves, who tolerate the neglect of their own interests by their own chosen representatives. If they will they can insist at this point; if they do not they will have at last to feel the sting when opportunity turns its back.

When speaking of Wisconsin some moments ago we noticed a tree-planting law. This would serve very well as an example of all such laws that have been passed by a number of States during the last twenty-five years or so. It is true that in a number of States so-called laws for the encouragement of tree culture have been rather prize-offers for the best row of shade trees along some highway adjacent to the competitor's property; and where this is the case the laws fall outside the domain of forestry and have no direct bearing upon our present theme. Nevertheless, in so far as such laws indicate an interest in tree growth, they demand at least passing notice. The best part of the timber culture laws up to the present time has been their intention. Practical results have seldom justified their passage, and the good sense which prompted them has often vindicated itself by their repeal. In short, an index of legislation as to tree laws in the States shows for the past few years more results in repeal than in enactment. If causes are sought for this failure to encourage tree planting by law they may be found, first in the lack of expert knowledge in their framers, next in an æsthetic rather than an economic impulse, and finally in the want of a real inducement to the planter. Experience teaches also in some cases that larger bounties than have been offered can scarcely be afforded by the State. Here again we are brought round to the conclusion that all such work in tree planting as does not produce to the farmer return in kind should be placed under the control of the State.

Reference has already been made to the function of protective forests. Probably all of the States will at some date have passed through a period in which the maintenance of forests for their protective value was advantageous, or even necessary. If we turn to California we find among other interesting local aspects of forestry the need of permanent protective forest areas over a large portion of the State. Here, though legislation has not yet emphasized the general feeling, a strong public sentiment and, within the past few months especially, a vigorous effort to satisfy the need, have become conspicuous among the more intelligent citizens of Lower California. Considerations of irrigation render the forests and the prosperity of the farming population of one and the same fate. If the forests go, or even materially dwindle, irrigation cannot hope to keep a permanent footing; while with due protective regulations coupled with State control of water supply, or at least with State regulation of individual consumption, there is every reason to expect the continuance of a thriving irrigation system.

We have already touched indirectly, in dealing with tree planting, the skirt of the problem of the reforestration of denuded areas. Unfortunately work of this character, though projects are everywhere in the air, has not been more than begun, the work of the New York State College of Forestry on the 30,000-acre College Forest being the most promising public attempt of which we have knowledge. In this case however, as in the others, we must wait for results, though there can be no reasonable inference that the work will be brought to any other than a successful conclusion. There are signs that in Michigan an energetic attempt will be made anon to bring the vast denuded areas, once so fertile in timber, again under tree growth. A number of States with similar forest interests eagerly watch the results of this attempt. It can succeed only with State aid, or by the work of the State itself, and for this a careful law is needed.

(*To be continued.*)

# PROGRESS IN TREE PLANTING IN THE UNITED STATES.*

By J. W. Toumey,

*Yale Forest School.*

It may be of interest to some members of the American Forestry Association to know something of the plan of coöperation by which the Division of Forestry gives personal and practical assistance to farmers and other land owners in establishing plantations of forest trees for economic purposes. It may also be of interest to know something of the practical results attained by a system of coöperation that has now been in operation a little more than a year, and what may be expected of it in the future.

Prior to the publication, in the Summer of 1899, of Circular No. 22—which outlines the plan of coöperation under which the work in tree planting since that time has progressed, the work of the Division in this branch of forestry was confined to establishing and maintaining less than a dozen forest plantations of a few acres in extent. These plantations were, for the most part, established in coöperation with Agricultural Experiment Stations in the Middle West. One plantation, however, of 15 acres in extent, was established at Ridgway, Pa., and at an earlier date a small plantation of coniferous trees was established in the sandhill region of Nebraska. During this same period a large quantity of seeds and seedling forest trees were distributed to applicants in various parts of the country.

Under the old régime the expense in procuring the stock and setting out and caring for a half dozen plantations was so great that it exhausted the funds available for tree planting, hence little else could be attempted. According to this method of coöperation the experiment station, or the individual with whom the Division was working, provided nothing but the ground upon which the plantation was established. The Division not only provided the planting plans, but bore all the expense and responsibility of putting them into execution. Thus while the officials of the Division resided a thousand or more miles away, where from the very nature of the case it was impossible to give explicit instructions regarding the details of management, the other party to the coöperation, who had no financial interest in the enterprise and usually none other, gave but little time or attention to the establishment or subsequent care of the plantation.

The plan of coöperation as outlined in Circular No. 22, under which the Section of Tree Planting is now working, is of an entirely different character from that shown above. It aims not so much to give as to assist. The fundamental principle is this: viz, the function of the Section of Tree Planting is to provide the applicant for our* assistance with information which will enable him to establish the best possible plantation of forest trees under his conditions of soil and climate, and for the purpose or purposes which he desires. The applicant for our assistance must have more than a cursory interest in the coöperation, he must have a financial interest in it. It stands to reason, and is verified by practice, that an average farmer will be much more careful in the planting, and will give closer attention to the subsequent care of a plantation, where he pays the bills than where they are paid by an outside party. Under the present plan of coöperation the applicant for assistance must be prepared to provide the necessary seeds and young trees, to plant the same, and to care for them afterward. In other words, planting plans are prepared by the Division for each applicant, which give complete instructions regarding the trees to plant, mixture of species, spacing, plant-

* Read before the meeting of the American Forestry Association in New York on June 25th.

* Professor Toumey did not give up his duties as Superintendent of Tree Planting in the Division of Forestry until August.—Ed.

ing and subsequent care, based upon a personal examination of each tract of land for which plans are made, and the applicant must put them into execution.

Experience has already shown that there is a great demand for planting plans from nearly all parts of the United States, and during this past year such plans have been made for farmers and other land owners from Maine to California, and from North Dakota to Texas. When the Section of Tree Planting is only at the expense incurred in making the planting plans, and when the plans where made for large areas are paid for by the applicant, hundreds of plans can be made to be put into execution by others where very few could be made and executed at equal expense to the Division were the Division to undertake the detailed care and direction of each plantation.

As one would naturally expect, the greater number of planting plans have been prepared for farmers on the prairie lands of the Middle West. During the fall of 1899 thirty-three plans were prepared for this region, and are now being put into execution by the persons for whom they were made. Already this season between forty and fifty planting plans have been made for farmers in New Mexico, Texas, Oklahoma and Kansas, while fully as many more yet remain to be made for farmers in Nebraska, Iowa, North Dakota, South Dakota, Minnesota, Illinois and Indiana. During the year the Section of Tree Planting will make in all probably about one hundred planting plans, all based upon the personal examination of each tract for which a plan is made.

When it is remembered that these cooperative plantations are scattered throughout many States, and that the experts of the Division in visiting the various sections of the country frequently arrange to give lectures on the subject of trees and tree planting, it is difficult to estimate the value of the work in stimulating the planting of forest trees according to the most approved methods. In this connection it is interesting to note that nurserymen and seed dealers report a larger sale of seedling forest trees and tree seeds during the past spring than during any previous season since 1872, when there was a great demand for both seeds and trees to be planted upon tree claims in the West. This increase in tree planting has unquestionably been largely the result of the activity of the Division of Forestry and the impetus that it has given to tree planting, particularly in the prairie States.

---

## SECOND GROWTH PINE vs. AGRICULTURE.

By W. M. Hays,

*University of Minnesota.*

The article on Second Growth Pine vs. Agriculture, in the Forester of last November, by Ernest Brucken, touches a very important subject. It is most unfortunate that the sandy tracts of land suited to the growth of White Pine, but unsuited to supporting farmers, are being sold, even at low prices, to settlers who would in the end be much better off on a smaller number of acres of good farm land costing them a higher price per acre.

From the standpoint of the agriculturist who seeks the best interests of the settlers it is a misfortune for state and country to have these sandy lands brought under cultivation and exhausted of their small amount of fertility. But now the untutored foreigner, the susceptible easterner, and the would-be farmer from the city are constantly being hawked into setttling on them by western land agents. These agents in boom times are so saturated with "boom talk" that they come to believe that sandy soil is "sandy loam with a clay subsoil."

The writer has seen much of the selling of lands in the Pine region and his greatest present interest in the forestry movement, which is taking on new and practical life in America, arises from a sense of the wrong policy of settling farmers on our sandy lands. Good lands in the wooded districts are much more profitable at present prices than the poorer sandy lands at the lowest prices or even at no price. The farther one goes west toward the great prairies in the pine regions of northern Michigan, Wisconsin and Minnesota, the more frequent are the periods of summer drought. A combination of sandy, leachy, poverty-stricken soil, with irregularity of rainfall, is a poor basis for building up a good family of American citizens. Such lands can not even support good rural schools, let alone provide means for sending children away for secondary education. I know neighborhoods where many of the pioneer homes have been abandoned because a few droughty years have made the mortgages thrive so fast that the farmers were bankrupted; and yet these lands will support tree growth. These same farmers had better have purchased small tracts of our western bonanza farms at present prices and have paid for them on the crop-payment plan. Every county in the forest regions of the three states mentioned has large areas of good farm lands. The larger part of our soils of mixed clay and sand, and of boulder clay, of silt soils, of sandy loams and of peaty lands should be thus utilized for agricultural purposes.

The States and the National Government should teach the folly of trying to build up strong, prosperous homes on light, weak lands. They should go much further, also, and use every practical means available to keep these lands under forest crops. The plan of encouraging private owners to manage their forest lands and farm woodlots properly is in harmony with American institutions, and the country is to be congratulated that Secretary Wilson and Mr. Pinchot are meeting with success in inaugurating this plan of helping timber owners to help themselves. The various schemes which have sprung up in many quarters for National and State forest reserves seem to the country, on first inspection, to be a visionary way of spending money and creating a larger class of public officials. But the national mind is in an expansive mood, and, fortunately, the seeds sown by the advocates of a State and Government forest policy have responded in the fertile soil of the times and are multiplying with unprecedented rapidity.

Large tracts of our sandy lands, and of our mountainous lands, could be acquired by the States and Government at a nominal cost, or could be retained by the Government without cost. Looking at all our lands as Uncle Sam's great farm no one can doubt that the two classes last mentioned should be a part of the great woodlot. Uncle Sam's tenants, the farmers, cannot thrive on these lands, nor can they make any money on them with which to pay him taxes to support schools, build roads, and run the government. Besides, they cannot raise him a good lot of tenants for the next generation, nor can they supply him with strong, well-educated citizens to inject into the life of his cities. If Uncle Sam leaves his woodlots to his tenants they will not take good care of them, because profits seem to be too far in the distance. But if he will set aside woodlots in each sandy or mountainous county and will have his agents care for them and employ the young men, who live on the neighboring good farm lands, to harvest his timber crops, he will sometime brag about his wisdom.

It is greatly to the interest of every settler on good land in counties having large areas of sandy soil to have these poor lands under proper forest management. The opportunities for remunerative labor in winter, the cheap fuel, the climatic benefits of the forests, the better financial conditions of the community, and the greater home demand in proportion to supply, for horses, grains, vegetables, meats and other farm products, make it important to the farmer to have forests on adjoining poor lands under a system of management which will make them productive. Towns and villages often object to forest reserves in their near vicinity.

They have an abnormal fever for tree destruction, and they see actual objections to promoting tree growth. If the citizens of these towns could look into the future they would see the stable, substantial advantages to the whole community of having many tracts of forests. The villages of Germany value their forest interests highly.

We ought to give more attention to the acquisition of forest lands and the inauguration of system in their management. Forestry experts and promoters should avail themselves of every opportunity to develop any forest reserve schemes which seem practicable. Possibly some of the land agents who are so well versed in titles, eliminating taxes, financing corporations for speculating in lands, and in colonization could be induced to direct a part of their energies into promoting forest reserves. The forestry board plan of Minnesota promises much good. The people, the legislators, and the farmers, in particular, should lend encouragement to such organizations and enterprises as will give us forest tracts managed under a forestry system better organized than that of any other country. Beginning later than older nations we should profit by their mistakes as well as by their successes. While the farmers in the vicinity of forest lands have a local interest in present investments to develop forests for future forest harvest work, the farmers and other citizens of communities without forest lands have also a very large interest at stake. They must have a perpetual supply of cheap lumber. The farmers of Iowa, for example, can not afford to withhold their moral and material support from plans which are designed to give this to their children. Care for our children's interests, and patriotism, call upon us to keep up the fertility of our farms, build good roads and permanent buildings, and plant groves about our farmsteads that our children may have better facilities than we have had, that they may at once meet the closer competition of the future and also reach the greater individual development made possible with the yearly march of progress.

---

## A RECENT FIRE IN THE SIERRA MADRES.

At about noon on July 22d, a fire was started in the Big Santa Anita Canyon in the Sierra Madres just above Pasadena, and within the boundaries of the San Gabriel Reserve. Although the cause of the fire does not seem to have been determined with certainty, most reports agree that a spark from a pumping engine was the beginning. There is no doubt that the fire started quite near such an engine, where three or four workmen first discovered it and tried to put it out. It soon got beyond their control however, and then, for nearly a fortnight, was reported daily in the papers as sweeping over the Santa Anita Canyons and over the region on each side of and to the north of them.

The fire at first spread up both sides of the Big Santa Anita and then, as it reached the canyon's head, worked over in a northeasterly direction toward Monrovia Peak, and on the other side northwest into the canyon of the Little Santa Anita. For a week these two branches of the fire were fought by large bodies of men who were called up from Pasadena and Los Angeles, and by August 1st, the fire which had spread from the Little Santa Anita toward Mount Harvard was thought to be under control. It got away again however (there seems to be some suspicion of incendiarism at this point) and for four days more burned fiercely on Mount Harvard and across in the direction of Mt. Wilson. Meanwhile the part of the fire which had passed eastward onto Monrovia Mountain succeeded in burning its way over the divide into the watershed of the West Fork of the San Gabriel. There the fire luckily had to burn down hill and could be met by a large force of men; for if it had burned on unchecked for a few days the whole valley

of the West Fork would doubtless have been swept clean, and the fire might have spread over such a large area that it would have been impossible to stop it before the autumn rains. In all many thousand acres of reserve timber were destroyed, and in most places the soil was swept clean of every vestige of vegetation. At times there were 300 men employed in fighting the flames, and the cost to the government in wages and food will amount to about ten thousand dollars.

The best account of the fierceness and rapidity with which the fire burned was given in the *Western Graphic*, whose special artist took the photographs which for taking photographs, the ridge led into an unburnt section like an inverted 'V.' The breeze was blowing steadily from the west, and, all unconscious of danger, one of the cameras was set in position, when, without warning, the wind suddenly changed, bringing the fire down the canyon at a terrific pace, the flames mounting fifty and seventy-five feet in the air. The roar was louder than a dozen batteries of artillery, and great masses of rocks, liberated by the fire, came down the mountain sides, breaking down trees and brush. The heat was intense, and at times the smoke was blown down in volumes, making it difficult to breathe. But I was

By courtesy of the *Western Graphic.*

**This picture was taken looking up a steep canyon, and shows a "hog-back" in the center which the fire, still some distance away, had just passed over. The line of flame extended across the entire canyon. "Two minutes after this photograph was taken the fire had reached and passed the artist's position."**

are reproduced in this number of THE FORESTER. The magazine reported him as saying in comment on his trip:

"Leaving the team at the base of the mountains, I 'broke brush' up a long ridge, and came in above where the fire was crossing into the Little Santa Anita. The fire was raging fiercely above me, and in making my way to a suitable place there for pictures, and pointing the machine at random, pressed the bulb, and then did record time down the canyon. The fire gained steadily, but a bare ridge was in sight, and as I made for it I stopped several times and took 'snaps.' The pencil pusher was wise enough not to go into the trap, and when I was safely out assisted me with the cameras. It was the

hottest work I was ever detailed on, and may God have pity on the brave men who are risking a terrible death to save the mountains and preserve the watershed." So fast did this fire advance in the canyons and up the mountain sides that many people were caught and forced to run for their lives. Although nobody seems to have been hurt, several had narrow escapes, and got off only after having hair or beard singed and clothing burned.


By courtesy of the *Western Graphic.*

**In the foreground is an unburnt ridge and in the distance is the devastated east side of the Big Santa Anita Canyon.**

When one considers that this is the dry season in California, and what the other conditions were under which the fire had to be fought, the wonder is not that it should have burned for a fortnight, but that it took no longer to bring it under control. The mountains in which the San Gabriel Reserve lies are so broken that a ranger often has to spend several hours in making detours to get ahead one mile. When there are no paths to lessen the natural difficulties, slow progress is necessarily the rule for the most experienced mountaineer. Up the steep slopes the fire can easily outclimb a man. Such being the case even a large squad of constantly employed rangers, skilled in the work of dealing with fire, and familiar with the position of every cliff and opening in the woods, would have found great difficulty in getting to points of vantage with promptness; but when the rangers were at most fourteen in number, and the fire fighters were many of them green men, delays were necessarily multiplied and increased. Called up suddenly from the nearest town, these volunteers were largely, sometimes wholly, incapable of doing anything without supervision, or of keeping up with their leaders. They had to work in a region where the lay of the land, complicated and unfamiliar at any rate, was probably shrouded in smoke; and even with enough competent men to direct their efforts, they were not the sort of material upon which to rely. One of those who left the woods with twenty-six others, on July 31st, characterized both himself and his companions by saying (as reported from Pasadena):

"Ranger Carter's legs were too long. He would walk over the mountains as if he had seven-league boots on. We city-

bred fellows had soft muscles, and we couldn't keep up with him. Why, he would walk up a perpendicular precipice just like a fly, and look back at us, and swear at us because we couldn't do it. He is about six feet tall, and about two-thirds legs anyway. Then he accused us of sneaking back and lighting fires of our own just to keep work going on in convenient places, where the climbing was easy. So we said we would quit and we wanted our pay. They begged us with tears in their eyes to stay, but we wouldn't do it."

The last of this may be exaggerated but there is probably some truth in it. When the country is rough, and the wind, which may at any moment give the fire a new direction, is changeable, such men may be more than half exhausted before the actual fight with the flames begins. When the fire broke out some of those who went into the woods were without food for twenty hours. One man was discovered asleep, almost surrounded by fire, and lying beside a log of which the other end was burning.

Considering these conditions it is not strange that most of the many reports of the Santa Anita fire should have been taken up with descriptions, not of the struggle with the flames, but of the many difficulties under which the fire fighters had to work. It is not too much to say that fifty experienced men thoroughly familiar with the lay of the land could, if given the advantage of a few trails and well-cleared fire lanes, have accomplished much more than the several times as many people who were actually engaged. When a fire is going through the tops before a strong wind nothing can stop it. But such a condition cannot last for many hours, and there are times and places in the history of every fire in which its strength is measured by the weakness of the forces that attack it. If all unnecessary obstacles to effective work at these times and places were eliminated many a sad report of destruction could be made shorter. The Santa Anita fire differed from many others only in that it occurred in a forest reserve, near towns like Pasadena and Los Angeles, and under conditions which led to its being photographed and reported fully. It pointed the lesson again that if a forest fire is to be controlled it must be dealt with, not merely soon after it has been set, nor yet in its very beginning, but long before it has started.

## Victor B. Fay.

Victor Bradshaw Fay, a student-assistant in the Division of Forestry, died of typhoid-malaria at Pine Bluff, Arkansas, on the sixth of August. At the time of his death he was on a field party from the Division of Forestry which was surveying a lumber tract near Pine Bluff. His illness was sudden and short. On Jnly 31st he left camp and went to the hotel at Pine Bluff; on the 6th he died.

Mr. Fay's home was at Washington, D.C. After spending two years at Harvard he studied forestry for a year at Biltmore in North Carolina, and then entered the Division of Forestry. He was much interested in his work, and left many friends to whom his death is a severe loss.

## Hiram Hurlbut.

Hiram Hurlbut, of Utica, N. Y., also a student-assistant in the Division of Forestry, died at Holland Patent, N. Y., on August 30th. He had been at work on the field expedition in Arkansas, and, though he came north with the rest of the party at the time of Mr. Fay's death, was taken ill with the fever.

After going through the Utica Free Academy, from which he graduated in 1899, Mr. Hurlbut entered the Division of Forestry as a student-assistant in December of the same year. He was much interested in forestry, and quickly showed an exceptional capacity for earnest and persevering work. Although he was without special training and still under twenty, the record of his short connection with the division promised much for the future.

# The Forester,

PUBLISHED MONTHLY BY

The American Forestry Association,

AND

Devoted to Arboriculture and Forestry, the Care and Use of Forests and Forest Trees, and Related Subjects.

All members of the American Forestry Association receive the FORESTER free of charge.

To non-members the yearly subscription rate is one dollar. Single copies of the current issue and of most back numbers can be had for ten cents apiece.

The FORESTER assumes no responsibility for opinions expressed in signed articles.

All contributions and communications should be addressed to the EDITOR,

**202 14th Street, S. W., Washington, D.C.**

**Vol. VI. SEPTEMBER, 1900. No. 9.**


**An Announcement.**

Those of our readers who were subscribers to the FORESTER when Dr. John Gifford used to edit it will be glad to learn that he is once more to contribute regularly to each issue. Now that there are so many people in this country who have a scientific and practical interest in forestry, it is only fitting that the FORESTER should devote some space to supplying this class of its readers with information about all important or useful literature which appears either in this country or abroad. Dr. Gifford has therefore consented to keep run of the foreign periodicals relating to forestry, and of the botanical, entomological and other journals which appear in America, and to contribute to each issue of the magazine a record, with reviews, of what has been published during the month. Dr. Gifford is Forestry Librarian at Cornell. With the help of the exchanges which the FORESTER receives, he will be able to make this record complete and thorough. With this great addition to the regular book reviews, the department of "Recent Publications" should henceforth prove itself most valuable to every American student of forestry. Dr. Gifford will begin contributing regularly to this department next month.

**Put out the Camp Fire.**

From the turning of the leaves until the time when the snow falls there are few days on which a spark dropped in the woods may not begin a forest fire. Throughout this season every one who takes a vacation with pipe, camp-kettle, and gun is a distinct menace to the welfare of the forest which he visits; and the only return he can make for the pleasure which Nature gives him is to take all possible care and precautions against the dangers which attend his presence. This is the least he can do and is only a duty imposed by decency. Nor is it a difficult one, for the necessary precautions are few and simple. Among the hundreds of sportsmen and campers who are already scouring the woods from the southern Appalachians to northern Canada and across to the region of the Rockies, there is none to whom they should prove burdensome. In regard to camp-fires—probably the greatest source of danger—the following set of rules from a recent editorial in *Forest and Stream* is clear and complete:

"Never build a fire where its flames can communicate to grass or brush or branches of trees.

"Never build a fire where the spark can be carried to brush, trees, leaves or grass.

"Never build a fire without first noting the lay of the land with respect to controlling it after it is kindled.

"Never leave camp for the day with the fire to burn unattended. Extinguish it thoroughly.

"Under no circumstances, when moving camp, leave the fire to burn or smoulder. Put it out.

"To extinguish a fire built upon the ground where there is turf, the roots of trees or other vegetable matter in the soil, pour water upon it until the ground is thoroughly soaked; then dig around about and well outside the circumference, throwing the earth in toward the center, and then wet it down again."

To this may be added:

Never use inflammable wads in a gun.

Make sure that a match is cold before you throw it away.

Never empty a pipe near forest litter.

Whoever observes these precautions may feel reasonably sure that he at least has had no hand in whatever destruction the autumn season may bring. Though to observe them is the least a camper can do, it is also, in most cases, the most; and when the most is so little one is under a double obligation not to shirk.

**What Forestry Isn't.**

In strange and disappointing contrast to the present frequency of speeches and articles on forestry, is the persistence with which many of their authors speak of the forester as if he were primarily a grower of trees whose chief work and aim is to plant seed. These people never weary of saying: Plant trees after you've cut; To preserve the forest resources of the country plant. Naturally the first question they suggest to the mind of the common-sense reader or hearer is: How long shall I have to wait for these trees to mature? But here with the word *plant* they end, and take no trouble to answer this question properly, or to show that the criticism which it involves has but a limited bearing on the value of forestry. As a result the old, and well-worn statement that forestry must be left to the government, is still made again and again, and the consequent crop of misapprehensions may be seen on every side. Only recently for instance the editor of a lumber-journal began an article by saying:—"It seems to be pretty well understood that from a business standpoint, forestry is not a good proposition;" and a few weeks before the same editor gave an editorial the title, "Forestry versus Commercialism" (*Mississippi Valley Lumberman* for July 27th)—a phrase as self-contradictory as would be one implying that agriculture, say, is essentially unbusiness-like. Rightly or not the seemingly authoritative repetition of such sayings has confirmed the inertia of scores to whom it comes easy to abide by the old ways of wastefulness. The word forestry is frequently used in a manner which shows that it is supposed to imply expense and sacrifice, not something which brings with it a material reward.

But is all this right and true? The experience of the practical men in Maine, New York and other States who are finding it profitable to manage their woodlands for a repeated yield has already proved that it is utterly wrong and mistaken. The trouble is that the people who try to show that there can be no alliance between private enterprise and the forester by citing such facts as that "it takes from eighty to one hundred years for a Pine tree to attain its best commerical value" (to quote again from the editorial above referred to) are unpractical themselves. They consider disadvantages and obstacles only. They recognize the impossibility of planting White Pine on the cleared and burned-over wastes of Michigan and Wisconsin with profit, as long as present tax-laws are in operation; but they overlook the fact that even in these two states conditions often favor the encouragement of trees which mature faster than White Pine. With a carelessness as unbusiness-like as that of which they accuse the forester they reason off-hand on the assumption that a forest is useless until the trees in it have attained "their best commercial value." They neglect the possibility of profit from improvement cuttings, and they apparently ignore entirely the all-important consideration that a forester's work may, and should begin, not after a clearing has been deserted, but before cutting has been commenced, and that many years of the undoubtedly slow process of reforestation can frequently be forestalled. Even in the cases where the planting of slow-growing trees is the only possibility, those who talk about the impracticability of private forestry seem to be blind to the value of long-time investments. Above all and constantly they forget that, as the *Southern Lumberman* recently remarked, "There can be no difficulty in realizing a profit on anything as soon as it can be shown that the profit is there."

The affirmative based on fact may be worth any number of theorizing negatives, but too often it is only the negatives that get a hearing. The idea that forestry may help a man to make money, as well

as benefit the community, is unhappily new to the American mind, and so has to encounter all the forces of mental inertia, business timidity, and prejudice against the new. Under these conditions, the people who try to educate and direct public opinion should take every care not to misrepresent forestry and so retard the spread of truth. It is safe to say that nothing could add more to the material well-being of the country than to have its land owners, big and little, wake up to a perception of the essential practicality of forestry, and to the suspicion that where something unpractical has been called forestry, somebody has made a mistake. This idea should be emphasized on every opportunity. To strengthen an argument for forest reserves by speaking as if this truth were uncertain, is not only unnecessary, but harmful, and, however generous the intention, can only load a good plea with poison. To represent the forester as one intent on setting out Pines that will take eighty years to mature, to make him a mere tree-planter and agitator for costly reserves, and to make unreasonable financial demands of him—this is simply to fly in the face of what is really the true state of things, and to throw obstacles in the way of a good and much-needed work.

**Spread of Interest in Forestry.**

In cheerful contrast to loose and careless misconceptions of the scope and nature of forestry is the very practical and wholesome interest in it shown by the number of applications for the position of student-assistant under the Division of Forestry. This position was created somewhat over a year ago for the double purpose of giving young men, who are thinking of engaging in forestry as a profession, practical experience and assistance under the supervision of experts, and of securing intelligent assistance for the government at slight cost. No effort was made to advertise the opportunity, but before the summer field-season of 1899 had begun, 35 applications were received. This last year 232 came in, more than seven times as many as the previous year. Striking as this increase is, its full significance cannot be appreciated until it is known that information about the student-assistantship and the work in the field had to spread largely through the twenty or so students of Yale, Harvard and other universities and colleges, who had appointments the first year, and through their friends. Thus 100 of this year's 232 applications came from Harvard and Yale alone, and 77 more were scattered over the Atlantic States near-by. If the information could have been spread throughout the Middle States as easily as it was in the neighborhood of these larger universities, the number of applications would probably have been greater still. Sixty-one of those who applied were appointed and sent to different parts of the country. These receive $25.00 a month each and their expenses in the field—not enough to allure those who have no interest in the work. Their time is spent chiefly in making forest surveys and in collecting measurements of trees and their growth, from all of which the experts of the Division of Forestry can later draw conclusions and results. If they are observant and of an inquisitive turn of mind, the summer's work will afford them the best of opportunities for learning the character of the questions a forester has to deal with and the ways in which he does a part of his work.

**An "American Reforestation Company."**

In a communication to the *American Lumberman* of August 18th, Mr. C. A. Schenck proposes the formation, under the *Lumberman's* auspices, of a joint stock company, issuing $100 shares, to be known as "The American Reforestation Company." The object of this company is to procure from the Legislatures of Minnesota, Wisconsin, Michigan, or the Federal Government, release from taxes and protection from fire for an area of cut-over land which it proposes to reforest. Provided five hundred shares can be issued at the beginning, the payment of 5% of the face value of the shares for the necessary expenses of

traveling, lobbying and agitating for legislation, will be sufficient to start with. If five hundred shares are not bought, or if the necessary encouragement cannot be secured from the State and Federal Governments, the plan falls through. If all goes well, however, a tract of say three hundred and fifty thousand acres, worth a dollar an acre, will be purchased and planted up gradually with White and Norway Pine. According to Mr. Schenck's calculations, 11 per cent. of the stock will be left unpaid after the entire area has been planted, "the interest on which will be sufficient to meet the annual expenses thereafter." The probable returns from the investment are stated as follows: "Supposing that there will be available per acre

After 40 years, 2,000 feet b. m. at $4.00,
After 60 years, 6,000 feet b. m. at $5.00,
After 80 years, 10,000 feet b. m. at $6.00,

our shares will have made 2½ per cent. interest per annum. If stumpage prices double every twenty years we should make 6 per cent. on the investment, and if they double in fifteen years we realize as much as 7½ per cent." Those who wish to invest in the company should write to the *American Lumberman*, 315 Dearborn St., Chicago.

It will be plain to any one who considers this proposal that the organization of the company would involve the settlement of many questions on which Mr. Schenk's letter does not touch. These should by no means present insurmountable difficulties, however. It would also involve striking at the heart of the difficult and important taxation problems with a definite policy. But it is all the more to be hoped for these very reasons that the matter will not end with Mr. Schenk's letter. Almost nothing is risked, and even if the company should get no further than its appeals to the Legislatures its members could hardly grudge it their lost deposits of five dollars. Apparently there is no appeal to a legislature like one in which a note of selfishness can be discerned, and the company could not fail to do the cause of forestry an immense amount of good.

---

## NEWS, NOTES AND COMMENT.

**The Forest Garden.**

"One of the best ways to see tree flowers is to climb one of the tallest trees and to get into close tingling touch with them, and then look abroad. Speaking of the benefits of tree climbing, Thoreau says: 'I found my account in climbing a tree once. It was a tall White Pine, on the top of a hill; and though I got well pitched, I was well paid for it, for I discovered new mountains on the horizon which I had never seen before. I might have walked about the foot of the tree for three score years and ten, and yet I certainly should never have seen them. But, above all, I discovered around me—it was in the middle of June—on the ends of the topmost branches, a few minute and delicate red, cone-like blossoms, the fertile flower of the White Pine looking heavenward. I carried straightway to the village the topmost spire, and showed it to stranger jurymen who walked the streets—for it was court week—and to farmers and lumbermen and woodchoppers and hunters, and not one had ever seen the like before, but they wondered as at a star dropped down.'

"The same marvelous blindness prevails here, although the blossoms are a thousandfold more abundant and telling. Once when I was collecting flowers of the Red Silver Fir near a summer tourist resort on the mountains above Lake Tahoe, I carried a handful of flowery branches to the boarding house, where they quickly attracted a wondering, admiring crowd of men, women and children. 'Oh, where did you get these?' they cried. 'How pretty they are—mighty handsome—just too lovely for anything—where do they grow?' 'On the commonest trees about

you,' I replied. 'You are now standing beside one of them, and it is in full bloom; look up.' And I pointed to a blossom-laded *Abies magnifica*, about a hundred and twenty feet high, in front of the house, used as a hitching post. And seeing its beauty for the first time, their wonder could hardly have been greater or more sincere had their Silver Fir hitching post blossomed for them at that moment as suddenly as Aaron's rod.

"The Mountain Hemlock extends an almost continuous belt along the Sierra and northern ranges to Prince William's Sound, accompanied part of the way by the Pines; our two Silver Firs, to Mount Shasta, thence the Fir belt is continued through Oregon, Washington and British Columbia by four other species, *Abies nobilis*, *grandis, amabilis* and *lasiocarpa;* while the magnificent Sitka Spruce, with large, bright purple flowers, adorns the coast region from California to Cook's Inlet and Kadiak. All these interblending form one flowery belt — one garden blooming in June, rocking its myriad spires in the hearty weather, bowing and swirling, enjoying clouds and winds and filling them with balsam; covering thousands of miles of the wildest mountains, clothing the long slopes by the sea, crowning bluffs and headlands and innumerable islands, and fringing the banks of the glaciers, one wild wavering belt of the noblest flowers in the world worth a lifetime of love work to know it."—John Muir, "The Wild Gardens of the Yosemite Park" in the *Atlantic Monthly* for August.

**Striking Case of Indifference.**

In its article on the forest fire which recently started in the Santa Anita Canyons the *Western Graphic* says: "A striking case of total indifference was manifested by an orchardist who owns a fine orange orchard right at the mouth of the Santa Anita. The flames were running up the mountain in plain sight, and when asked why he was not fighting the fire, and trying to save his water supply, he calmly remarked that 'it is too hot to fight fire, and my deed called for so much water any way.' The deed may call for the water, but the rancher may call for it in vain."

**The Lumber Transgressor.**

Under the title, "The Way of the Lumber Transgressor," the *American Lumberman* published a letter from its Duluth correspondent in the issue of July 28th, from which the following is quoted:

"If the auditors of the State of Minnesota during the past ten years had been as active in watching the interests of the State as is the present auditor, Minnesota would to-day be millions of dollars better off. If the present auditor had been in office from 1880 to 1890 the State's general and State school funds would have been incalculably larger, and hundreds of men would not now have the sin of wholesale theft upon their consciences. The work of Auditor R. C. Dunn in the Duluth district the past winter and spring alone is evidence enough of all this. He has saved the State in the past few months a share of its diminished resources that represents a proportion of far more than a million dollars on the Pine timber it held ten years ago.

"A few of these instances of saving will be interesting. A heavy Cedar tie and supply firm went into the woods down the north shore of Lake Superior last fall and contracted with settlers for the cutting of all ties, etc., on three sections of State land. The company had not a shadow of title to the land, and knew it, but its Duluth representative made contracts in his own name, representing to the choppers that he was the agent for the lands, and they went in and cut some 44,000 ties, relying upon his statements. The State heard of it and waited. The contracting firm settled with the tie makers under its agreement and then brought the ties to this city, where they were taken in charge by the State auditor. A settlement has just been made with the firm, by which it pays 15 cents stumpage for every tie, good and culls, in the entire lot. Fifteen cents is about three times what the stumpage would have sold for, good ties alone, in

an open market, but the auditor determined to have triple damages, and got them. The firm was in no position to make any kick and paid up rather than get into worse trouble. These ties ran 45 per cent. to culls, worth nothing, and the cost to the firm here, aside from the settlement with the State, was 21 cents to cut and haul, 10 cents to deliver at Duluth, and the superintendence, etc. To this add 15 cents stumpage on the entire cut, and then sell the good ties here at 40 cents or thereabouts, and it will be seen that some one has received a pretty severe lesson. The Duluth representative of the firm was spirited out of the State when the auditor first began investigation, in fear that a settlement more severe than in cash might be demanded.

"There have been several other, though smaller, instances of tie stumpage settlement on the same lines in this immediate neighborhood this season.

"A well-known logger who lives along the Mississippi River got hold of a part of a school section, claiming that his men had squatted there before the survey, and he took four 40's exactly in the center of the section. Last winter his Pine there was cut by a Rat Portage gentleman, who in some way failed to note the lines and, instead of cutting four 40's, cut the entire school section, sixteen 40's. This was so glaring an error that the owner called on Auditor Dunn and said he had by some unaccountable mistake cut over his lines and wanted to settle for it. He had cut, he said, 800,000 feet of State Pine and would settle at once if Mr. Dunn cared to. Mr. Dunn thought it all right, of course, and would not for a moment doubt the word of the big logger, but he would like to have his own cruisers look at the timber and estimate the cut. The logger didn't think this necessary, but was compelled to assent, and the matter was investigated by the State. Imagine Mr. Dunn's surprise to find that instead of 800,000 feet from State land the logger had taken 3,500,000 feet on the twelve 40's surrounding his little patch in the school section. He has, however, settled on Mr. Dunn's estimates."

**Fire and Natural Reforestation.**

An investigation of forest fires and reforestation on burnt areas is now being pursued by the Division of Forestry through Prof. C. S. Crandall, lately of the Colorado Experiment Station at Fort Collins. This work, which Professor Crandall began some years ago as a collaborator of the Division, will be carried on chiefly in the northern part of the State, where the prevalence of Lodgepole Pine makes the conditions very different from those farther south. The investigation is an important one, for until the forester knows what to expect from fire and how to deal with burnt-over areas, he can do little in a region where burning has been as extensive and is still as common as in Colorado.

In this investigation the examination of the first stages of reforestation will be made on areas of which some were burned over thirteen years ago, and on which Professor Crandall has already made surveys and recorded progress at different periods since. In the case of the old fires of which there is no record, the date of burning can usually be determined by the age of the trees which came up after the fire, and the necessary surveys and measurements can then be made. Special attention will be paid to the causes which make the cones of the Lodgepole Pine open and distribute their seed. These are not yet understood, and in view of the tree's habit of storing its seeds in the cone, often for many years, and setting them free when killed by fire, are very important.

Professor Crandall will have four assistants and will begin his examination in the Medicine Bow Range. From there he will work down the Continental Divide to the neighborhood of Long's Peak.

**Planting Evergreen Seeds.**

*American Gardening* published the following note from a correspondent in Nebraska, Mr. C. S. Harrison, in its issue of Aug. 11th:

"We have been in the habit of planting them [conifer seeds] in the spring,

but I am convinced the fall is the best time. The great trouble in raising evergreens is their damping off in hot weather. I have had hundreds of thousands mown down even under the most approved shade.

"Some things led me to believe the fall was the best time. In the mountains the squirrels have dropped cones in the water, where they have remained all winter, and sprouted in the spring. It occurred to me that if we could give our seedlings an earlier start we might avoid the damping off. This trouble occurs before the second set of leaves is formed. So last fall I planted Ponderosa Pine and Douglas Spruce. They were up the first thing this spring, and commenced growing and were vigorous enough to resist damping off when the weather grew hot. My fall-planted seedlings are twice the size of spring-planted ones. I shall make fuller experiments with other kinds. I think with most of them we shall have a better stand and finer plants."

**Fish and Game in the Park.**

A "Statement of Facts" issued by the Minnesota Park Association, gives the following summary of the animal life now found in the region of the proposed park:

"The waters contain the following kinds of fish: great northern pike, muskallonge, black bass, wall-eyed pike, pickerel, lake trout, white fish, silver bass, croppies, rock bass and perch.

"The big game in the forests are: moose, caribou, deer and bear in large numbers, with a few elk.

"Smaller game are wolves, foxes, mink, otter, squirrels and other smaller wild animals found in other parts of the country at this latitude.

"The wild fowl consists of nearly every variety of duck, wild goose, quail, woodcock, plover, pheasant, grouse and snipe.

"The game, wild fowl and fish, have been but little disturbed on account of the region's having only recently been made accessible to white men, and because the Indians only kill game and fish sufficient for their daily food.

"In the three large lakes of Leech, Cass and Winnibigoshish and in the Mississippi, Turtle and Leech Lake river steamers of light draught can ply hundreds of miles; while in a row boat, it is estimated, one might fish a hundred days over different fishing ground every day and never take his boat out of water for a portage once, except to go around the two government dams at the outlet of Leech and Willibigoshish lakes."

**Smoke of Forest Fires off Shore.**

"NORFOLK, Va., Aug. 12.—Dense masses of smoke, rolling out to sea from burning woods on the North Carolina coast, form at present an unusual menace to navigation, and one that has already cost the loss of one ship. Owing to the impossibility of locating the new lightship, other vessels may get lost in the foglike smoke, as did the Palestro last week.

"The government coast survey steamer Blake, which left this port on Friday for the purpose of locating the anchorage of lightship No. 69, the new vessel designed to warn the shipping from Diamond Shoals, returned to port to-night. She reported that the dense smoky haze off Hatteras prevented her working, and she therefore abandoned the delicate mission until the fire shall have abated."—*Washington Post*, August 13th.

**Forest Fires in the Rockies.**

Owing partly to last winter's light fall of snow, partly to the dry season this summer, the forest fires in Colorado and other Western States are already unusually common and extensive. The following three clippings from the Denver *Republican* of August 17th are examples of reports without end:

"MONTROSE, Colo., Aug. 16.—Forest fires are burning fiercely in all directions. To the east there is a big blaze on the Black Mesa, to the north huge volumes of smoke go up from the Grand Mesa and the Uncompahgre plateau to the west is ablaze in three different places. Thousands of acres of valuable timber

have thus far been destroyed, and unless rains set in soon the timbered sections will suffer as never before.

"One of the rangers in the government employ was in town to-day and secured a large body of men to go and fight the fires on the Uncompahgre plateau."

"BUENA VISTA, Colo., Aug. 16.—To-night the flames from the forest fires twelve miles west of here can be seen. This fire has been burning for a number of days, but not until to-night has it gained so much headway that it could be seen. It is reported that the amount of damage done the green timber will be beyond description. The fire since it has started, some days ago, has burned over several miles of timber, and at this writing seems to be in a fair way to reach this side of the mountain and finish what timber is on this side."

"CENTRAL CITY, Colo., Aug. 16.—The timber fire at the head of Silver Creek is reported to be gaining ground and is spreading over a considerable area. There are several shaft buildings in this vicinity, which it is feared will be destroyed, and, should the fire be turned toward the west, it may endanger the safety of the people at Apex."

An Associated Press dispatch of Aug. 21st said: "Ten million dollars' damage is estimated to be the result of the forest fires in Colorado and Wyoming. The estimate was made by C. E. Wantland, general agent of the Union Pacific Railroad. According to that official, the loss on timber is only a comparatively small item. Mr. Wantland said to-day:

"'In many places the fires are spreading over almost bare country, land where there is nothing but young growth, which might have made the forest of ten and twenty years hence if it had not been for these fires.

"'Lands which could have been sold for homes because of the pleasant surroundings will now for years not be worth much. The vicinity of Glenwood Springs and such places, where the tourists resort, will be much affected in a commercial way because the scenery will be impaired.'

"In Middle Park the fires are burning so fiercely that ranchmen are beginning to fear that their homes will be swept away."

---

## RECENT PUBLICATIONS.

**Annual Report of the Pennsylvania State Commissioner of Forestry.** By Dr. J. T. Rothrock. Report of the Pennsylvania Department of Agriculture for 1899. Pages, 11.

Dr. Rothrock begins his letter of transmittal to the State Secretary of Agriculture by saying: "You will observe that it [the report] is briefer than usual. This is due to the fact that up to the commencement of 1900 much of the work done has pertained to what may be called the period of agitation of the cause of forestry. It was necessary before our people could be induced to enter upon a new work that they should be convinced that it was necessary. This has been accomplished, and the task now before us is to begin the practical work of forest restoration." The substance of this report even more than its comparative brevity, shows that Pennsylvania has advanced rapidly in its appreciation of the meaning and value of forestry. The report consists almost entirely of an account of the ways in which practical forestry is beginning in the State, and of indications of lines along which work may best proceed. Many subjects which have an equal interest for other States, and many phases of these subjects which are peculiar to Pennsylvania, are touched upon more or less fully. Several passages from the report will be quoted or referred to from time to time in the FORESTER. Meanwhile it is fitting to point out that, as in Colonel Fox's New York report for 1897, the increasing value of hard woods is thought worthy of comment. On page 133 Dr. Rothrock says: "The cone-bearing timber is relatively, so far as this generation is concerned, a thing of the past, but there are still large quantities of hard wood remaining. Until within five years the Beech, Birch and Maple, which were usually associated with the Hemlock, were regarded as having practically no value. The owners of large tracts on which such timber still remains are beyond doubt aware that this 'hardwood' timber must speedily increase in value. The only

argument in favor of its removal is that if it is invaded by fire it will be destroyed. This is undoubtedly true, and it brings them squarely to the question whether they are not entitled to the protection for which they pay taxes? Ample legislation is upon the statute books if they will use their influence to have those apprehended who create the fires which destroy their property. There is no doubt whatever that it is not only the duty of the county commissioners, when possible, to ferret out, but to try, by legal process, those who are guilty of destroying by fire the forest property of our citizens, and failure to do so may well be construed as an act of infidelity to duty."

Several pages of statistics about the forest fires of 1898, compiled by R. S. Conklin, are appended to the report.

**Paper in Foreign Countries—Uses of Wood Pulp.** Vol. XIX. of the U. S. Consular Reports.

This is a five-hundred page volume of Consular Reports on the manufacture and consumption of paper in foreign countries and the materials used for its production. These reports are based on a list of questions propounded by the American Paper and Pulp Association. There is no attempt to summarize or classify the reports, but as their chief purpose is to give information in regard to particular foreign markets, this is hardly necessary.

**Bulletin 62—Pennsylvania State Department of Agriculture; A Summer's Work Abroad in School-gardens, Home-gardens, Playgrounds, Parks and Forests.** By Myra Loyd Dock. Pages, 33; illustrations, 9.

In England, Switzerland and the more thickly settled portions of Germany, the effort to make the most of woods, rivers, parks and gardens, both financially and in the way of æsthetic enjoyment has been carried much farther than in all but a very few places in this country. Miss Dock's interesting pamphlet is the result of a summer's observation of the ways, means and results of such efforts in these three countries. Its object can perhaps be gathered best from a paragraph on page 16, in which she says: "The states of New Hampshire and Massachusetts together receive about six millions of dollars a year from summer visitors, because these States have fine roads and clean, well-managed villages where visitors are able to enjoy their beautiful scenery. When village improvement societies have effected the same needed improvement in Pennsylvania, thousands of people will be able to enjoy the river and mountain scenery that is now almost a sealed book to the outside world." The subject matter of the pamphlet may be divided roughly under the heads Towns, Parks, Playgrounds and Improvement Societies; Farm and Garden-work for Women; Schoolhouses and Grounds; The Black Forest and its Administration; and The Black Forest Community. These topics are treated with no great minuteness, but it is not necessary that they should be. Details of work in this country would pretty surely differ greatly from those abroad. The object is mainly to suggest the many ways in which it is not only desirable, but possible, for individuals and communities in America, and especially in Pennsylvania, to engage in what is usually known as improvement-society work. The pamphlet is interesting and ought to serve the purpose for which it was written to good effect.

**The Wild Gardens of the Yosemite Park.** By John Muir, in the *Atlantic Monthly* for August.

No one who is fond of outdoor-life, whether he hopes ever to visit California or not, should fail to read Mr. Muir's articles on the Yosemite Park, of which the second appeared in the August *Atlantic*. Mr. Muir describes nothing which anyone might not see, but much more than all but a few ever notice. He observes not only with the interest of the naturalist but with a rare perception of the beautiful, and writes in a style that cannot fail to lift, somewhat at least, the blindness of even the most unobservant. There are few whom his articles could not help to a greater enjoyment of wood and field.

**Growing Norway Spruce for Paper Pulp.** By L. T. Duncan, of the University of Minnesota in the *Minnesota Horticulturalist* for August.

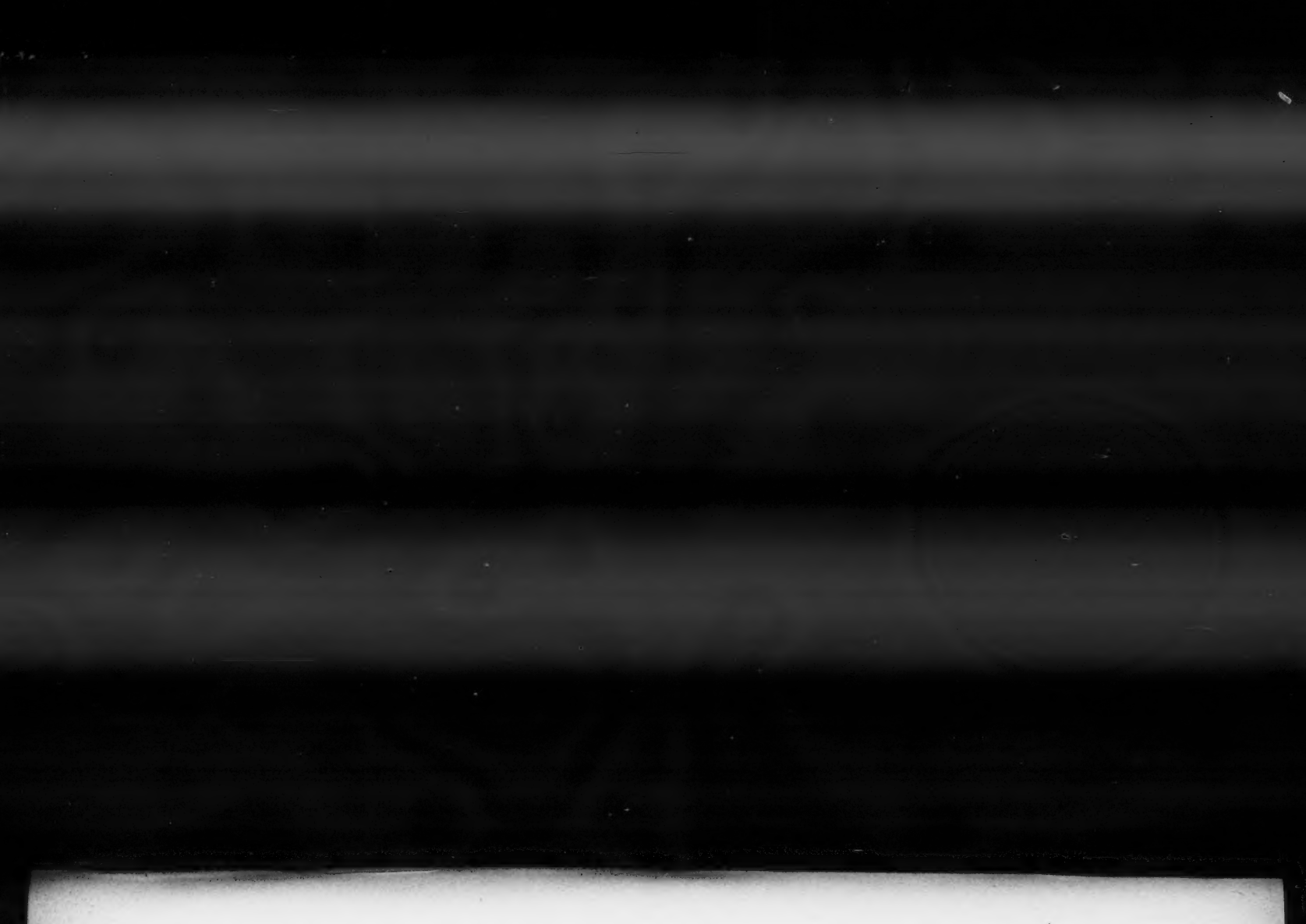
Mr. Duncan is of the opinion that the Norway Spruce which he has found "growing to a timber size in thirty years, around a well-drained open field, with sandy sub-soil," has much to recommend it to a prospective wood-pulp operator in Minnesota. He admits that the growth of Black and White Spruce, and their preferences in regard to soil, would not be encouraging. Though his figures are based on only a limited number of measurements, and, as he says himself, all the comparisons he makes are of growths under different conditions, he concludes that "it is evident that a Norway Spruce is a rapid grower and will, under proper conditions of culture and fire protection, furnish pulp-wood in twenty-five or thirty years."

**The Practice of Forestry by Private Owners.** By Henry S. Graves. **The Progress of Forestry in the United States.** By Gifford Pinchot.

These two articles which appeared in the Year Book of the United States Department of Agriculture for 1899, and which were reviewed in the FORESTER for June (page 131), have now been reprinted as separate pamphlets. They may be obtained by application to the Division of Publications of the Department.

**Some Business Problems of American Forestry.** By C. A. Schenck, Ph.D. Limited Edition. Price, $1.00. French Broad Press, Asheville, N. C.

(*To be reviewed next month.*)



## THE APPALACHIAN PARK.

**The Proposed Appalachian National Park** (with a two-page map and illustrations). By J. A. HOLMES, State Geologist of North Carolina. Vol. VI., No 7.

---

## CUBA.

**The Forest Conditions of Cuba** and **The Silvicultural Prospects of Cuba** (with illustrations). By DR. JOHN GIFFORD of the Cornell Forest School. Vol. VI., Nos. 5 and 8.

---

## THE TREE PLANTING REGION.

**The Forests of Indiana, the Reliance of Her Manufactures.** By JOHN P. BROWN, Secretary of the Indiana Forestry Association. Vol. VI., No. 5.

**Tree Planting in Oklahoma.** (Present methods and suggestions for improvements) and **Notes on Oklahoma.** By W. L. HALL, Ass't Sup't of Tree Planting, Division of Forestry. Vol. VI., Nos. 6 and 7.

---

**Forests and the Paper Industry.** By C. W. LYMAN, Sec'y of the International Paper Co. Vol. VI., No. 6.

**The Bigtrees of California.** By R. T. FISHER. Vol. VI., No. 4.

**Forest Law in the United States.** (The first two articles of a series). By TREADWELL CLEVELAND, JR., Historian of the Division of Forestry. Vol. VI., Nos. 7 and 8.

**What Forestry Means to the United States.** By the HON. JAMES WILSON, Sec'y of Agriculture. Vol. V., No. 12.

---

*On receipt of 10 cents any one of the above numbers of THE FORESTER will be sent postpaid.*

**THE FORESTER, 202 14th Street, S.W., Washington, D.C.**